Meeting Report

American Health Information Committee
January 23, 2007

The American Health Information Community (AHIC), a federally chartered commission formed to help advance President Bush's call for most Americans to have electronic health records (EHRs) within 10 years, held its 11th meeting on January 23, 2007, at the Department of Veterans Affairs, 810 Vermont Avenue, NW, Washington, DC, 20420.

The purpose of the meeting was to bring together Community members to continue discussion of steps toward ways to achieve its mission of providing input and recommendations to the Department of Health and Human Services (DHHS) on how to make health records digital and interoperable, and assure that the privacy and security of those records are protected in a smooth, market-led way. The meeting's discussions focused on: (1) state-level health information exchange (HIE) recommendations, (2) HIE business models, (3) AHIC priorities and 2007 use cases, (4) an announcement on a joint Department of Veterans Affairs (VA) Department of Defense (DoD) inpatient EHR, (5) Workgroup recommendations and updates, and (6) Nationwide Health Information Network (NHIN) prototype architecture demonstrations.

DHHS Secretary Michael O. Leavitt chairs the Community. The remaining 16 members, selected by Secretary Leavitt, are key leaders in the public and private sectors who represent stakeholder interests in advancing the mission of the Community and who have strong peer support. Members serve 2-year terms.

A summary of the discussion and events of this meeting follow.

Call to Order

Joining Secretary Leavitt counterclockwise around the table were:

Robert Kolodner, MD, Interim National Coordinator for Health Information Technology

John Menzer, Vice Chairman, Wal-Mart

Scott Serota, President and CEO of the Blue Cross Blue Shield Association (Justine Handelman, Director of Federal Relations at the Blue Cross Blue Shield Association, represented Mr. Serota for part of the meeting)

Linda Springer, Director of the Office of Personnel Management (during part of the meeting, Ms. Springer was represented by Dan Green, Deputy Associate Director, Center for Employee and Family Support Policy, Office of Personnel Management)

Charles N. (Chip) Kahn III, President of the Federation of American Hospitals

E. Mitchell (Mitch) Roob, Secretary of the Indiana Family and Social Services Administration

Gail Graham, Director of Health Data at the Department of Veterans Affairs, Veterans Health Administration

Nada Eissa, Deputy Assistant Secretary, U.S. Treasury (Ms. Eissa was represented by Adele Morris, Senior Economist, U.S. Treasury, for part of the meeting)

Douglas Henley, MD, Executive Vice President, American Academy of Family Physicians

Kevin Hutchinson, CEO of SureScripts

William Winkenwerder, Jr., MD, Assistant Secretary of Defense for Health Affairs (Dr. Winkenwerder was represented by Carl Hendricks, CIO of the Military Health System, for part of the meeting)

Nancy Davenport-Ennis, founder of both the National Patient Advocate Foundation and the Patient Advocate Foundation (Gail McGrath, President and National Director of Government Affairs, National Patient Advocate Foundation, represented Ms. Davenport-Ennis for part of the meeting)

Leslie Norwalk, Acting Administrator, Centers for Medicare and Medicaid Services (Ms. Norwalk was represented by Tony Trenkle, Director of E-Health Standards and Services, Centers for Medicare and Medicaid Services, for part of the meeting)

Craig Barrett, PhD, Chairman of the Board, Intel (Mr. Barrett was represented by Brian DeVore, Industry Affairs Manager, Intel Digital Health Group, for part of the meeting)

Lillee Gelinas, RN, MSN, Vice President of VHA, Inc.

Bettijoyce Lide, Scientific Advisor for Health Information Technology in the National Institutes of Standards and Technology's Information Technology Laboratory (representing Robert Cresanti, Under Secretary of Commerce for Technology, U.S. Department of Commerce)

Steven Solomon, MD, Director of the Coordinating Center for Health Information and Service, Centers for Disease Control and Prevention (representing Julie Gerberding, MD, Director of the Centers for Disease Control and Prevention)

David Brailer, MD, PhD, Vice Chairman, AHIC, participated in the meeting via conference call.

Introductory Comments

Secretary Leavitt welcomed participants to the meeting and thanked the VA for hosting the meeting (this AHIC meeting was held at the VA instead of the DHHS to facilitate preparations for the President's State of the Union Address). The Secretary also thanked the VA for continuing to allow Dr. Kolodner to serve as the Interim National Coordinator for Health Information Technology (HIT). AHIC began its work just over 1 year ago. In that time, the Community has worked with urgency on a path that is producing results quickly. As an example of how AHIC's work is adding to the national landscape in HIT, Secretary Leavitt referred the Community to a recently released report entitled *Health Information Technology Initiative Major Accomplishments: 2004-2006*.

Secretary Leavitt outlined the day's agenda, and before moving forward, announced that he has officially accepted the Health Information Technology Standards Panel (HITSP) Interoperability Specifications as

recommended by AHIC in October 2006. Finally, Secretary Leavitt formally welcomed new AHIC member John Menzer, Vice Chairman of Wal-Mart, to the Community. Dr. Brailer participated in the meeting via conference call; therefore, Dr. Kolodner assisted Secretary Leavitt and served as Co-Chair of the proceedings.

Approval of December 12, 2006, Meeting Minutes

Minutes from the December 12, 2006, AHIC meeting (which was held via teleconference) were distributed, reviewed by Community members, and approved unanimously with no changes.

State-Level Health Information Exchange (HIE) Recommendations

State-Level HIE Steering Committee Recommendations

Ms. Linda Kloss, of the American Health Information Management Association (AHIMA) and the FORE Foundation, presented recommendations that have come forward from the State-Level HIE Project. As a representative of the Project's Steering Committee, Ms. Kloss reminded the Community that the Project has made two previous presentations at AHIC meetings to discuss progress made. In September 2006, the State-Level HIE Project presented its first phase of recommendations: (1) build mechanisms to promote strategic synergy among states and between state and federal efforts, (2) create salient financial models for sustainable HIE, (3) engage and leverage public and private payers, (4) advance the understanding of how state policymakers and government agencies should be involved, and (5) develop vehicles for support and knowledge-sharing among state-level HIE initiatives. During the December 2006 AHIC teleconference, recommendations in three of four major areas were presented (state-level HIE in coordination with major federal initiatives, HIE and coordination with quality and transparency initiatives, and Medicaid and HIE). Ms. Kloss explained that recommendations in the fourth area, financially sustainable HIE, would be presented following her remarks. The Project's first deliverable was a workbook entitled *Guide to Key Issues: Options and Strategies for State-Level Health Information Exchange*.

After completing its first two phases of work, the Project's Steering Committee has reviewed progress to date and developed four overarching strategy recommendations to the Community and to the Secretary for future action. These recommendations were developed with the intent of encouraging useful and healthy debate about how HIE transparency and transformation should fit together, and how states can be successful partners. The four recommendations are:

- **Recommendation 1: The federal government should consolidate oversight of HIT and quality/transparency initiatives under AHIC.**
    - 1.1 Create incentives for innovation and cost-effective coordination.
    - 1.2 Fund research on models for data capture, aggregation, and privacy.
    - 1.3 Appoint a representative of HIEs to quality workgroups and projects.
    - 1.4 Study sustainable business models for HIEs that supply aggregate data for quality measurement and reporting.

- **Recommendation 2: The Secretary should design the successor to AHIC and transition it to a public-private organization by 2008.**
    2.1 Charge a design group working in 2007 for implementation in 2008.
    2.2. Reintroduce the revised *2004 Framework for Strategic Action* that accounts for AHIC, state and local HIEs, and the NHIN.

- **Recommendation 3: Each state should establish or designate a consolidated, public-private health transformation governance mechanism that includes at least HIE and quality/transparency.**
    3.1 Build on work in the state-level HIE *Workbook* to describe models, authority, and core roles.
    3.2 Appoint a new State Workgroup for formal liaison to AHIC.
    3.3 Support a state-level learning community.
    3.4 Insert state perspective into the work of all AHIC Workgroups.

- **Recommendation 4: The federal government, to the degree possible under the statute, should fund transformation and provide strong leadership through CMS policy.**
    4.1 Develop a state workgroup to develop criteria and recommend mechanisms for funding.
    4.2 Provide leadership regarding Medicaid and Medicare support for state-level HIE and quality/transparency.
    4.3 Identify funding mechanisms.
    4.4. Establish a process for advancing the criteria.

Recommendation 1 Discussion Highlights

"When you talk about the Federal Government having a role, are you thinking that they should be the organizer of this, or are you thinking they are the long-term overseer?" – Secretary Leavitt

"We saw the Federal Government, and particularly AHIC, as convening some real discussion about how we go forward with less divergence, less opportunity for solutions that are going to need to be melded back together again…So we are looking for some convener to make sure we move at standardization." – Ms. Kloss

"There is a little bit of tension, there seems to me, between the idea of designating a successor to AHIC, as a public/private organization, and then the idea of federal funding and using it as an oversight." – Secretary Leavitt

"We do envision it being public/private, and that certainly there needs to be a strong role for the government in this. It's not completely private. So we didn't propose specific mechanisms, but we did propose that as a major payer, and a major purchaser of health care…there might be a role [for the Federal Government] for advancing the efforts in the states." – Ms. Kloss

"I really believe in HIT…we've got to have some connectivity, but I see that as the vehicle, not the substance, of collection of data, and aggregation of data for transparency, for accountability, for quality assurance…We haven't really figured out how to use IT to really make it effective for reporting, much less have it play the kind of role that it would play here." – Mr. Kahn

"I would ask you to look at these recommendations as not having not IT/technical underpinnings, but really governance and coordination underpinnings. So what is common across them is the notion that the work that state level health information exchange initiatives are doing is often disconnected from what quality and transparency efforts may be in the state." – Ms. Kloss

"I want to comment about [Recommendation] 1.1, and this notion of cost effective coordination...There has got to be a way [to have] cost-effective coordination between public and private sectors…And the idea of aggregating that data [in the VA's system] for quality and transparency seems to be fairly simple…This notion of the private/public partnership has got to be put on steroids if we're going to achieve the President's vision, as quickly as we can." – Ms. Gelinas

"Bringing these state activities into this coordination role, whether it's the Federal Government, as it's listed here playing that role, or whether it's really the public/private partnership playing that national coordination role, I think that's the only disconnect I have with the recommendation, because…if you look at the sub-bullets, it really is about this national partnership between public and private. And if we could modify that language, I think the recommendation is good, if it's a coordination role."
– Mr. Hutchinson

"I really question whether we want to bring quality and transparency initiatives, which already have an established protocol in process, together into this milieu, or whether we want to let them flourish in their own space. If we were to bring them in here…we would need a heavier clinical dose, if we're going to be venturing into approving and reviewing quality standards…So my advice would be to proceed with these recommendations, but, perhaps, back the quality and transparency piece of this, at least out for further discussion, and clarify precisely what's meant by those words, before we move forward." – Mr. Serota

"It would be nice if we could avoid duplicating things, and take advantage of what's already known. We stand ready to share on that front, and I know the VA does as well. I agree with Scott's comments about the role of this group being principally a convener, and a national coordinator…consolidation of oversight is a pretty strong pair of words, because it implies almost regulatory authority. And I'm not sure that's what we want to do here with this group." – Dr. Winkenwerder, Jr.

"From a policy and a directional standpoint, and encouraging sound information processes, we think that these two critical areas, health IT and HIE can't be disconnected…We're just supporting that need, and suggesting that that same kind of coordination needs to be occurring at the state level…Our focus is clarity in the role of states, and replicability of the vision that we've had at this group, to allow that to happen in the states." – Ms. Kloss

"At the Community level, the connection that we have to the quality and transparency initiatives that are occurring at the federal level, exist by virtue of the Workgroup that we have working on the quality standards…At the federal level, I think we've got that dealt with very well. I think what Linda has brought to the forefront is at the state level, that degree of connectivity between state related quality initiatives and HIT may not exist as well as it does at the federal level. And so is there a role for this body to encourage better coordination at the state level…I certainly would endorse that degree of coordination, but again, 'consolidation' and 'oversight' may be too strong terminology." – Dr. Henley

Recommendations 2 and 3 Discussion Highlights

"My vision on this has been from the beginning that we would see AHIC have a private/public successor. I clearly believe there needs to be a counterpart to AHIC at the state level, and we need to find a way to consolidate the efforts that are happening at states, and then coordinate what's happening among states with what's happening at AHIC. In my mind, I have envisioned that that would be a chartering model, where states formed their consolidated effort, and received some kind of charter from whatever the successor organization is." – Secretary Leavitt

"The question that's been raised today earlier is whether or not the quality effort, which frankly has a similar kind of vision, [has] a coordinated vision or a consolidated vision. I've noted that there is a

tension often between the people who manage the IT, and the people who manage the enterprises…While there is a tension, and often some duplication, having them separate is important." – Secretary Leavitt

"Tthe heads of the state HIEs that we've worked with here at the table would suggest that their vision of health information exchange, and its importance as a transformation mechanism, goes beyond IT. That is, when we look at the mission of these organizations, it's about quality, and it's about advancing change and improvement in health care. In some ways, it's one part of the flow." – Ms. Kloss

"As the head of a state-wide HIT operation, those comments are terrific, but we're trying to connect Indianapolis to Evansville, and the quality piece, we're not anywhere doing that yet…The states that I'm familiar with have…a much more practical view of what they need to achieve in the near term, because you can't get to the quality piece that you're talking about, until you get the connectivity that is still troublesome for many states." – Mr. Roob

"On Recommendation Two, I think obviously we're going to need to have that discussion, or a Workgroup that would look at this going forward. I just question the timing…Because I think we want to take advantage of all the learnings we possibly can, to lay out how this will go forward, and I think '07 could be a year where we'll see a lot of activity in this particular space that could have learnings that we would want to do to move that forward. Maybe end of '07 or early '08 is the right timing to look at the successor organization." – Mr. Hutchinson

"On Recommendation Number Three, I think the challenge, from a governance perspective, is…making sure that we're not squeezing off innovation. Because in many instances, what we've seen, from even the state level organizations, and the activities they've had in deploying HIT programs, is associated with being creative in their approach, being creative in incentivizing their positions, or being creative in how they're deploying." – Mr. Hutchinson

"Does AHIC, today, have a charter limit, a time limit?" – Dr. Winkenwerder, Jr.

"We have a 2-year limit, but it's renewable…The idea has been always to create a successor."
– Secretary Leavitt

Recommendation 4 Discussion Highlights

"We've not defined yet what needs to be a fairly broad role for the private sector. And I worry that if it's just about federal funding, that it creates a dependence; it creates a lack of involvement…The motto here ought to be 'create, fund, and spin out.' And it's not inconceivable to me at all, that in order to accomplish this, both the birthing of the successor, and the consolidation of the state counterparts, that we could use some federal money to provide seed capital…The condition of getting the seed capital ought to be the creation or an existence of an ongoing business model that will perpetuate it beyond that seed capital." – Secretary Leavitt

"It certainly is in line with [Recommendation] 4.1 where we reflect that work would need to be done to understand what the criteria would be for transformation entity, and that would be a precondition for any funding." – Ms. Kloss

"I think the seed capital concept, particularly subject to the criteria that you described, is very consistent with the direction we've gone. But it does raise the question about who sets those criteria, and I think the answer to that is very much embedded in the other three recommendations that Linda has raised; that today, regardless of whether we have a quote, governing, or an oversight mechanism, we don't even have a communication mechanism between the federal and state efforts, as they're beginning to form. And I

think establishing a means of communication between AHIC, or somebody like AHIC, and these efforts that are in the fledgling level in the states, can help us." – Dr. Brailer

"I think we should be cautious about our language with respect to successor. Remember that AHIC provides two important high-level functions. One is to provide a formal legal mechanism for advice into the government…The second value or function that AHIC provides is providing a mechanism for convening coordination and communication…These could move hand in hand." – Dr. Brailer

"The reason AHIC has the capacity to do this is first of all, as it's currently constituted, it is a group that advises the Secretary. The corollary to that is that the reason that has value is because of, essentially, the executive order, which says the Secretary will have the capacity to link the buying power of the Federal Government into it. Then we're adding to that by coordinating the buying power of the Federal Government with the buying power of many other organizations, both government and private." – Secretary Leavitt

"Right now AHIC is a federal advisory committee. Its whole purpose is to advise, but if we're able to then create a successor, it can both continue to advise, and begin to act as the conduit to these state entities. I think that's the vision. And I see a complementary vision happening on the quality side. And it is, in my mind, very much an open question as to how those two interrelate." – Secretary Leavitt

"There is a body of research that would suggest, again, that implementation of certified EHRs, PHRs, etc. can bring huge cost savings to everybody, not just the Federal Government, but the private sector as well. And yet we can't get over this hurdle of thinking of everything as new money versus simply redistributing money that's already in the system. And we've got to somehow get over the present inefficient way of projecting those financial impacts, especially as it relates to the federal sector." – Dr. Henley

"I think if you look at Recommendation 4 as the Federal Government being a large payer, it might be, as opposed to a granter of money; and I would encourage Leslie and the other folks at CMS to articulate that vision to the states through the MMIS and MITA infrastructure…That's a missed opportunity, at least to date." – Mr. Roob

"That is addressed quite well in the task report on the Medicaid role in State-Level HIE, so I would recommend that you look at that specific set of recommendations." – Ms. Kloss

"I sort of had reticence in the first recommendation regarding the role that was envisioned there in the bold text regarding AHIC. I do think that we are at a point at which statute is needed to define these relationships, which is implied here…I'm concerned that it may not be lasting, because there is just nothing like law to make things happen, and obviously, to secure them over time." – Mr. Kahn

"I expect that at some point Congress will legislate on this…In the absence of legislation, we ought to be driving as hard and as fast as we can, not to outrun them, but to simply guide what would be prudent. What I believe our discussion leads us to today…would be recognition that the question of the interrelationship between quality and health IT is still an open question, and requires more thought. That we do intend to move forward with the creation of a public/private successor, and that our objective would be to accomplish that in advance of the 2-year authorization of this body." – Secretary Leavitt

"One of the first orders of business of that successor organization would be the creation of state counterparts, with the means of chartering, or some other link that would facilitate coordination and communication…A condition of that chartering would need to be a sustainable business model…it's possible, I suspect, that some federal component could be a piece…[but] it should not be viewed as simply a creature of federal appropriation." – Secretary Leavitt

"Is it fair to interpret that, that we're effectively saying 'yes' to Recommendation 2 as a precursor to considering any of the other recommendations?" – Mr. Barrett

"I think that's probably a fair statement, yes." – Secretary Leavitt

Health Information Exchange Business Models

Kelly Cronin, Office of the National Coordinator (ONC), opened this panel with a brief orientation on two mechanisms that have been utilized to fund exploratory work on business models for HIE. The first mechanism relates to the four NHIN consortia contracts. The consortia recently delivered to ONC their own cost and revenue models that are based on their ideas around what a viable business model would be for HIE from a service provider perspective. The second mechanism utilized to fund work on business models for HIE utilized funding from the State Health Information Exchange Project to review financially sustainable HIE services.

The NHIN Initiative Cost and Revenue Models

Dr. John Glaser, Vice President and CIO of Partners HealthCare, noted that the critical attribute of the NHIN is that it is financially sustainable (i.e., it provides services that are deemed to have value by stakeholders and willingness to pay on their part). The four NHIN contractors were requested to develop revenue and cost models to illustrate potential sustainability approaches; Dr. Glaser provided a summary of those analyses and provided his own observations. He reminded the Community that NHIN's intent is to foster widely available services that facilitate accurate, appropriate, timely, and secure exchange of health information that follows the consumer and supports clinical decisionmaking.

Dr. Glaser noted that the following shared assumptions and concepts guide this work: (1) the NHIN is envisioned as a "network of networks;" (2) the organizations that provide network services may take several forms; (3) there are some basic network services necessary for connecting health records, security, record look-up, and routing; and (4) many other network services ay be considered valuable in local settings. Dr. Glaser listed a number of NHIN services that could be provided, including secure data transport services; identification, authentication, and authorization services; participant registry and directory services; data mining and analysis services; etc.

Dr. Glaser commended the four contractors involved, noting that they faced some significant challenges in creating their models. For example, they were asked to define the business model (services, governance, pricing, and adoption) for a very complex IT infrastructure for which there is very little marketplace. They also were asked to define a model for which many of the base conditions may not be in place (e.g., extensive EHR adoption and quality-based financial incentives). Furthermore, they were basing the model on hundreds of variables and dozens of assumptions.

The revenue and cost models that were developed were based on very different business models and approaches. They differed in terms of the balance between NHIN services and sub-networks, NHIN governance structures, and revenue strategies and sources. All models were projected to reach a break-even point within 8 years, ranging from the very near term to about 7 years (not including the cost of EHR adoption by providers, hospitals, physicians, etc.). Dr. Glaser noted that reaching financial sustainability through any of these models will require progress on several NHIN conditions. All of the models require an active government role in terms of developing standards and certification, forming policy, providing initial capital, and/or serving as an employer/payer funder of NHIN services. In

addition, all models identified secondary uses of data as a critical contributor to sustainability (often accounting for more than 50% of revenue).

Dr. Glaser presented the following conditions for NHIN adoption:

- Financially viable participant networks and organizations
- Conformance of participant networks and organizations to necessary NHIN standards and policies
- Methods for addressing misaligned financial incentives and care improvement externalities
- Sufficient base of EHR adoption
- Broad adoption of standards
- Robust privacy and security policies and mechanisms
- Legal and policy approaches to anonymized, secondary uses of data.

In concluding his remarks, Dr. Glaser presented the following open questions/issues: (1) What else should government and the private sector do to facilitate progress on the conditions for NHIN adoption? (2) How well do we understand the business tradeoffs between services that support inter-network exchange and exchange within participant networks? (3) What are the differences in effectiveness of various revenue models? and (4) How viable is secondary uses of data as a source of NHIN revenue?

The Economic Proposition of Financially Sustainable HIE Services

Stephen Parente, of the University of Minnesota and HIS Network, LLC, provided an economic perspective on how to achieve financial sustainability for HIE. He noted that the opportunities to achieve sustainability in this field are favorable in two primary regards: (1) a return can be made on this, and (2) there are opportunities for public and private partnership (and the opportunities in the private sector are substantial). He explained that "sustainability" occurs when a firm, venture, or enterprise operates where it can break even at a certain point in the future and can grow to where marginal revenue equals marginal cost. Key factors include the size of the enterprise, time from start-up to sustainability, source of revenues, expected tenure/type of revenue sources, stakeholder expectations (profit sharing or other), barriers to entry/intellectual property rewards, technological opportunities/constraints, and rate of technological progress and redundancy threat.

In discussing the economics of information technology, Mr. Parente referenced the Applicable Conceptual Model developed by Erik Brynjolfsson and Lorin Hitt. The model touches on three different measures of IT value: (1) productivity, (2) profit, and (3) consumer welfare (which presents opportunities for public good creation). Mr. Parente then discussed sustainability benefits in terms of scale economies, scope economies, and network externalities. Economies of scale from single products include reductions in the average cost of a single product in the long run (e.g., clinical messaging) resulting from an expanded set of output (e.g., prevented clinical wait times and complications). In application, clinical messaging can yield reductions in medical errors and higher productivity. Higher productivity in turn yields additional revenue to more than offset the cost of the message fee or marginal cost of the messaging provider. These savings will be long-run savings and (ideally) increase over time (e.g., more aging baby boomers, more complications, better high-quality patient volume).

Mr. Parente explained that the concept of economies of scope for multiple products is similar to economies of scale, but economies of scope look at efficiencies from combining different types of products through changes in pricing, marketing, and distribution. In application, the bundle of products is worth more than the sum of the single products—for example, bundling clinical messaging, medication history, e-prescribing, and clinical data sharing on a common Web-based platform. This can be marketed to physicians with high broadband access (with the possibility of adding a diagnostic imaging component). High return on investment (ROI) (i.e., sustainable) single products can cross-subsidize lower ROI single products.

In terms of network externalities, externality-generating activities (e.g., a shared clinical database) raise the production or well-being of an externally affected party. Mr. Parente explained that positive externalities create the public good. Applications examples include: (1) shared clinical data services providing a national data repository to readily identify the high potential success of a vaccine for a future pandemic flu strain, and (2) KatrinaHealth results from prescribing utilizing a previous prescription exchange infrastructure that was tapped for a national emergency.

Mr. Parente offered three approaches to optimizing the public good:

- Support adoption of technologies that: (1) produce single products that optimize positive "scale" externalities, and (2) produce even greater "scope" positive externalities for product bundle combinations.

- Balance public/private investment to get the best network externality return on investment.

- If the private sector can profit and create a positive externality, identify whether the public sector can provide bridge financing or temporary exclusive property rights to mitigate the risk/reward.

A standard assumption is that IT cannot yield profits; it can only reduce costs. However, Mr. Parente emphasized that this assumption is not true if an industry has high barriers to entry. Health care has many barriers to entry, so providers and insurers should buy IT not just as a tool to control cost, but to profit as well. Mr. Parente discussed identifying sustainable revenues, noting that the best-case sustainable revenues include a per-transaction fee, substitutable "staple" commodity, subscription services with sustainable fixed base pricing and variable add-on pricing, the ability to be bundled as part of a software purchase/lease contract, and multi-year most favored trade partner status through opportunity cost savings. Less advantageous revenues for sustainability include grants for quality improvement/IT prototypes and venture capital without established revenue sources in start up.

Mr. Parente summarized by noting that to get the value of sustainability, one should:

- Seek long-run efficiencies (returns to scale).

- Have multiple revenue sources lined up and balance one's portfolio.

- Identify revenues that are expected to survive in the future and continuously renew and update.

- Look for bundling and channeling opportunities to get economies of scope.

- Be forward looking and either plan for redundancy or develop a new product to replace future lost revenues.

Financially Sustainable HIE Services

Victoria Prescott, General Counsel and Business Development Specialist at the Regenstrief Institute, Inc., presented the Community with the results of the ONC-sponsored study to identify and analyze HIE services that have achieved financial sustainability. At the onset of this project, her group defined the parameters for inclusion in the study. As part of that effort, they defined HIE, which is used as an umbrella term for several different types of specific exchanges of clinical and/or administrative data. HIE services were considered to involve the exchange of information between multiple stakeholders, and was not limited to an increase in use of EHRs or telemedicine. Financial sustainability was defined as having sufficient revenue for ongoing operations. Ms. Prescott noted that start-up costs were not included in some of their analyses because some of these data were not available. She provided a description analysis of five specific HIE services her group found to be useful: (1) clinical messaging, (2) medication history, (3) e-prescribing, (4) sharing patient clinical data at the point of care, and (5) quality measurement reporting.

Clinical messaging is defined as the delivery of delivery of electronic clinical results (such as lab test results, radiology reports, or transcribed reports) from the source system (e.g., lab, radiology center) to the intended recipients (e.g., ordering physician, primary care physician). The key rationale for this is that the ROI is easy to understand. It also establishes connections between clinical data providers and physician offices. A master patient index is not necessary, the clinical relevance of the data is important, and the physician receives the tests results faster than services provided today. Ms. Prescott noted that their study indicates that hospitals and/or labs would be willing to pay for this clinical messaging service.

Medication history involves electronically sharing a patient's medication history obtained from multiple sources with the clinician or institution treating the patient. This service is attractive to hospitals to help them comply with Joint Commission on Accreditation of Healthcare Organizations medication reconciliation requirements. It also is also useful because of the eligibility and formulary functions that are typically included in a medication history-type project; those can reduce drug costs for the patient, the payer, and also increase efficiencies. These data also are very relevant to clinical care. Ms. Prescott noted that as is the case for clinical messaging, their data indicate that hospitals are paying for this service based on the number of patients that were matched in the data.

Ms. Prescott explained that e-prescribing automates the process for the clinician to prescribe medications for patients by electronically delivering the prescription to the retail pharmacy or mail order service. This service reduces the physicians' and pharmacies' administrative expenses because it greatly increases the legibility of the prescription and processes refills. It also has a positive impact on many stakeholders (i.e., payers, doctors, patients, pharmacies). This service also could include a medication history component as well as the eligibility and formulary information, although this information would be needed before the doctor writes the prescription. Ms. Prescott described some implementation challenges associated with e-prescribing. For example, a critical mass of pharmacies will need to be covered, a critical mass of medication history needs to be available, physicians have to be willing to use the software, and there would be changes in workflow. She also noted that in their study, the e-prescribing delivery network actually paid for a portion of the HIE fees from the pharmacies.

Sharing patient clinical data a the point of care entails gathering and providing electronic clinical information (e.g., patient medication history, lab test results, diagnoses) from multiple sources on a patient when the patient presents for care. This has tremendous value to the treatment of a patient, avoids errors, reduces duplication of tests and procedures, and improves the continuity of care for the patient. A standardized repository of clinical data can also benefit other entities, such as public health, researchers, and the pharmaceutical industry. The addition of clinical decision support and reminders functionality can further enhance treatment and quality of care for patients. Implementation challenges to this service

include the fact that it is a very large-scale project, a sophisticated master patient index is necessary, it is difficult to project the value across different stakeholders and therefore there is a hesitancy to invest, and standardization of data is needed for this service to be of any real value. In terms of paying for this service, Ms. Prescott explained that the only example her group found was from Indiana, where a philanthropic foundation has provided long-term funding. She noted that some other HIEs are examining the feasibility of a subscription model.

Quality measurement reporting involves sharing health care information (clinical and claims) between multiple data sources for the purpose of quality measurement that can support provider quality initiatives and also serve as a basis for determining incentives to providers from payers. This service is beneficial in that it can result in a consistent set of quality measures. The payers recognize the improvements and efficiency in quality of care, and will have more influence by banding together to develop a set of standard quality measures. This also will allow providers to comply with only one set of measures (as opposed to many). Providers also will receive information on their own patients and incentives to help them improve. As quality increases, the patient receives better outcomes. The most significant implementation challenge to this service is the need for a critical mass of data and participation. Consensus on the quality metrics, standardization of the data, and the need for a master patient index represent additional challenges.

Ms. Prescott presented three major recommendations from the group, noting that the recommendations are generalizations, and that local circumstances and market conditions will dictate where HIE initiatives should focus their initial efforts:

- Leverage any infrastructure built and data collected (re-using data to build other services).
- Recommended initial services (less complex) are clinical messaging and medication history.
- Recommended later services (more complex) are e-prescribing, sharing patient clinical data at the point of care, and quality measurement.

Ms. Prescott concluded with some overall observations, noting that there is no single approach to reaching financial sustainability, as evidenced by the diverse projects studied. Market factors are not well understood (payer reimbursement incentives are helpful). Common challenges have been identified, and collaborations, a critical mass of participants, and a critical mass of data are necessary for many of these projects. The bottom line is that although they are few in number, there are sustainable models for HIE.

Discussion Highlights

"This is a very clinical presentation of the topic, and…it leaves out…the customer entirely. Even Southwest Airlines allows you to book a seat online. Why? Because the customer demands it. And the nature of the whole presentation is really, what is convenient for the service provider, not is what convenient for the customer or the patient. And if anything is going to drive this, I think it's going to be customer demand." – Mr. Barrett

"In our own assessment of the patient or the customer, their demands on us are not here today. We need to move them there, but if we're writing the checks in fiscal year '07, the major driver, at this point, is still the provider…Today I'm not sure that the customer is quite the voice that we might like them to be." – Dr. Glaser

"Probably the pressure from the customer has to come from the customer who pays the bill, which is either the employer, or the Federal Government. Neither of those voices have been particularly loud in

this instance…We're starting to see some momentum in those areas, [and] if that momentum grows, I think most of your analysis has to be kind of turned on its head, because it's going to be a customer-driven perspective, and not a provider-driven perspective." – Mr. Barrett

"Unfortunately, I think the individual customer-driven demand is held captive by the fact that his employer has an insurance provider, who has this administrative bureaucracy which throttles that demand and channels people in directions. But if the employer, for example, starts to say, 'I'm only going to do service with business who provide this capability,' then that's a much louder voice…It has to be an integrated voice, from my perspective." – Mr. Barrett

"What part of the items that Victoria talked about would have the best chance of having consumers just revolt, and demand that it be provided?" – Secretary Leavitt

"One of the things that we're seeing, certainly [in] the VA experience, is that personal health record where people start saying, 'You know, I want my own copies of my records' and…'by the way, if you're giving the laboratory [results] to my provider, how about if I have a copy, because the next provider, in another state when I'm traveling or something may not have it.'" – Dr. Kolodner

"People like making their medical appointments online...We are doing now about three-and-a half, four percent of all of our appointments. That's a low number, but to my knowledge, it's the highest of anybody, anywhere. People are making their appointments online. We have people in Iraq making appointments when they get back to the United States, online." – Dr. Winkenwerder, Jr.

"Patients are very much looking for the opportunity to have greater control over their health information. The knowledge that they gain from having access to the results of the information that we have about them, as providers, is something that they very much want." – Mr. Parente

"The thought of not always having to go sit in the waiting room at the +doctor's office for communication with the doctor, I think is a huge opportunity for the system for efficiency and customer service." – Mr. Barrett

"Patients are clamoring to get their own information. We see that. So I think the demand is there. I think there is a lot of frustration, because once you're into the medical system with a health problem, it's very difficult to get your own information…Another issue that I didn't hear in the presentations, and I think it's certainly worth discussing, is who owns the data; and with this data, what stake does the consumer have in that?" – Ms. Graham

"Whether it's on the patient's side or on the provider's side, there is no money for clinical messaging. Doctors don't get paid if they get online. I have a great relationship with my doctor, but he is not going to give me his e-mail address, and we're not going to talk on e-mail, because that's time, and he doesn't get paid for it. Now, you can say, I could demand that of him, but how much can I really demand that of him when I'm insured?" – Mr. Kahn

"[E-prescribing] makes a lot of sense; but in terms of the workflow, it's so complicated for small physicians offices to do it, [to] transfer to it, and there's really nothing in it for them. Other than providing better service, there is no money there. The money is for the insurers if there is more ordering of generics." – Mr. Kahn

"At the end of the day, the consumer in health care tends to be passive; because the fact is they rely on a third party payer, and the customer doesn't have the same relationship with the provider that you do in other markets. I think it's a unique market, and either the money's got to flow differently, or something

has got to be shaken to really build these relationships. Otherwise, I think we're not going to make that much progress on these fronts." – Mr. Kahn

"I have to disagree with the money issue on e-prescribing…In my opinion, in knowing this space with respect to where the pharmacies are, where the payers are, where the physicians are, it is a disruption in workflow, initially, in implementing these systems, without a doubt. But when they see the value of getting these refill requests in a physician's office in an automated fashion, it does save them time, which brings in more money." – Mr. Hutchinson

"I'll call everyone's attention to a really, very interesting Zogby poll that was published, a poll of Texans. And so if we take the risk of generalizing from Texans to the U.S., notwithstanding, the two highest ranked preferences that this sample that was done last week reported; number one was 73 percent of the respondents wanted e-prescribing…Second was virtual visits to the doctor, 42 percent." – Dr. Brailer

"I think there can be a big impact on educating the patient, and then the patient on their ROI…And as you know, last year, Wal-Mart introduced the $4 generic drug program. And our theme was to put price back in the equation, price for the customer. And we received tremendous response. We've had a dramatic change in behavior, not only in the customers, but in the industry. So I think working back to the patient and the customer can have dramatic results, and it can move very, very quickly." – Mr. Menzer

"We are tremendously underestimating the capability of the doctors in the United States, if we don't think that they can put routine, everyday…technology into their offices. Frankly, if my doctor can't put that into his office, I have no interest in visiting that doctor." – Mr. Barrett

"My colleagues in family in medicine, we're approaching 35 percent adoption of EHRs in the absence of financial incentives to do so. So that is occurring…Chip is correct in the sense that the way that we pay for health care in this country needs to change. That's not asking for new dollars in the system. It's a redistribution of the dollars that are already there. There is abundant research that shows, if you connect individuals to a medical home, that quality goes up, and costs go down." – Dr. Henley

AHIC Priorities and 2007 Use Cases

Dr. Kolodner introduced this panel by reminding Community members that Secretary Leavitt accepted AHIC's October 2006 recommendations for round one of the standards development effort. He explained that the current panel would discuss the development and identification of primary focus areas for round two. Dr. John Loonsk, ONC, explained that use cases are descriptions of events that detail what a system (or systems) needs to do to achieve a specific mission or stakeholder goals. They convey how individuals and organizations (actors) interact with the involved systems and strive to provide enough detail and context for follow-up activities to occur. Generally, the follow-up from a use case is work that leads to the development or implementation of a specific software system. He explained that ONC has been using high-level use cases based on priorities expressed by the AHIC Workgroups that strive to provide enough detail and context for standards harmonization, architecture specification, certification consideration, and detailed policy discussions to advance the national HIT agenda. The high-level use cases focus on the exchange of information between organizations and systems rather than the internal activities of a particular organization or system.

For 2007, AHIC Workgroups have identified more than 120 priorities and issues for consideration. ONC has clustered like priorities and issues among the different Workgroups and organized them so that as many can be attended to as possible, and that there are opportunities to reuse existing use case efforts.

This clustering has led to three high-level categories of use cases—Consumer, Provider, and Population—as well as several options for immediate action in each category. Dr. Loonsk explained that Community members are being asked to prioritize the possible use cases in each high-level category. He reminded Community members that each high-level use case category has existing use cases (i.e., Consumer = Consumer Empowerment, Registration and Medication History; Provider = Electronic Health Records-Labs, Emergency Responder EHRs; Population = Biosurveillance). He also noted that as of January 21, 2007, 13 AHIC members responded and ranked the options to provide input on the use case development schedule. Consumer Access to Clinical Information (Consumer Use Case), Medications Management (Provider Use Case), and Quality (Population Use Case) are ranked first in their respective use cases.

Overview of Consumer Use Case Choices

Dr. Rose Marie Robertson of the American Heart Association commented that all of the Consumer use case choices presented focus on ways to improve the health of the public. Key to all three of them is having adequate privacy and security safeguards. Dr. Robertson then presented the following three potential uses cases in the Consumer category:

- ***Remote Monitoring.*** Providers in chronic care management would benefit from automated remote monitoring of patient physiological indicators recorded on home medical devices, which are then transmitted to the provider for inclusion in the patient's EHR. Examples of indicators could include weight, blood pressure, heart rate and rhythm, pulse oximetry, other vital signs, as well as other data from home medical devises such as glucose readings.

- ***Remote Consultation.*** Based on the information provided through remote monitoring and other sources, consumers could consult with their health care providers remotely. This could occur through secure e-mail as well as real-time online consultations. Patients could also benefit from reminders initiated by clinicians that would be delivered via e-mail or other means to remind patients of events and activities that are important to maintain their level of health.

- ***Consumer Access to Clinical Information.*** Consumers will benefit from the ability to access important health care data stored within their EHR to assist them in making decisions regarding care and healthy lifestyles. Accessible information could include registration information, medication history, lab results, current and previous health conditions, allergies, summaries of health care encounters, and diagnoses. Consumers would be able to incorporate this information from their EHRs into personal health records and share the information with designated individuals as needed. The PHR should describe medical terminology into layman's terms for the consumer. PHRs should be portable between vendors, so consumers can transfer the information as required.

Overview of Provider Use Case Choices

Dr. Blackford Middleton, Corporate Director for Clinical Informatics Research and Development at Partners HealthCare, noted that EMR adoption in the United States is at best approximately 24 percent in primary care. This percentage varies greatly between small office environments and large office environments, and between specialty and subspecialty care. He explained that there are significant market barriers or market asymmetries facing adoption that must be considered. For example, physicians often are asked to be the purchasers of health care IT, but research analyzing the value of HIT use in ambulatory care practice environments suggests that up to 89 percent of the benefit goes to the public or private payer. Dr. Middleton noted that other data indicate that EHR advanced computerized provider order entry capabilities could save the country about $44 billion. Furthermore, if those EMRs are able to communicate with each other, the value of that HIE would be about $78 billion. He presented the following two potential use cases in the Provider category:

- ***Medications Management.*** Consumers and providers would both benefit from electronic prescribing of medications, which would include transmittal of prescriptions to pharmacies by clinicians. Providers would be able to receive real-time feedback regarding potential adverse interactions and verify medication compliance by the consumer. Pharmacy benefits management entities would be able to interact with providers and consumers during the medications prescribing and fulfillment activities. Consumers would also be able to request prescription refills, view their prescription histories, verify insurance eligibility and coverage, view formulary information, and incorporate all of this information into their personal health records.

- ***Referrals and Transfer of Care.*** Providers would benefit from the ability to transfer care information to and from other medical providers. Transfer of care occurs in many circumstances, ranging from emergency care to acute care and longer-term care management. For example, providers issue patient referrals to specialists, who would benefit from receiving summary health information about the patient. This summary record could include clinical information about patient lab results, problem lists, vital signs, immunizations, and other data. Effectively communicating summary information during transfer of care will require appropriate methods of unambiguously identifying patients and matching them to their data.

Overview of Population Use Case Choices

Dr. Carolyn Clancy, Director of the Agency for Healthcare Research and Quality (AHRQ), noted that much of the content presented in the Consumer and the Provider use case choices focuses on quality of care. The challenge is to determine how best to take advantage of HIT applications to make reporting on quality of care transparent to consumers, and at the same time, help providers get a view not only of how they are doing, but actually give them information in something close to real-time. Dr. Clancy presented the following potential use case in the Population category:

- ***Quality.*** Providers would benefit from the collection and dissemination of health care quality data such as Hospital Quality Alliance (HQA) quality indicators for inpatient care and Ambulatory Care Quality Alliance (AQA) quality indicators for ambulatory care, particularly if this information can be integrated into EHR systems within the providers workflows. Clinicians could benefit from receiving real-time or near real-time feedback regarding relevant quality indicators and contraindications for specific patients. Additionally, quality data across multiple providers and entities could be aggregated for the purpose of public reporting.

Dr. John Lumpkin of the Robert Wood Johnson Foundation presented two additional potential use cases in the Population category. He commented that in his opinion, of these two use cases, the one that provides the most opportunity to explore and advance key issues related to future HIT, is the Public Health Case Reporting use case.

- ***Public Health Case Reporting.*** Public health effectiveness could be enhanced through electronic case reporting to state, local, and federal public health authorities. By incorporating case reporting criteria into laboratory information systems and EHR systems, providers can be alerted to the need to report a case based on lab results. Upon provider authorization, a minimum interoperable data set per jurisdictional guidelines could be generated and automatically transmitted to the appropriate public health authority.

- ***Response Management.*** During public health emergencies, coordinating response, and managing available medical resources will be important. Providers and public health authorities should be able to exchange information regarding the availability of hospital beds, medications, and medical

personnel, among other resources. Immunization response could include the ability to track and manage the administration of countermeasures and integrate information from the commercial sector countermeasure supply chain. An immunization registry could inform public health entities about which individuals have been immunized within a given period of time utilizing a specific vaccine. Information about the immunization status of health care providers would assist in planning the threat response.

Discussion Highlights

General Discussion

"What we've tried to do is to titrate in appropriate amounts of priorities, as associated with what can be done in an extension, what can be done in an entirely new use case, and with the target of coming out with four, in total, for the next round [including the Emergency Responder EHR use case]." – Dr. Loonsk

"We have created an on-deck circle, and I would like to ask the Office of National Coordinator to begin leaning forward to the next priorities expressed. That isn't to say we take them on, but I think the third crank will be the most difficult to get within the timeframe." – Secretary Leavitt

"We're also going to be…going to go through a transition. We're contemplating a transition to a successor group, and there will be some need for us to be especially well prepared for that third crank. This has been particularly useful, in that I think it has created a tentative agenda for us on an ongoing basis." – Secretary Leavitt

Consumer Use Case

"I ranked Remote Monitoring first…because I thought of it in a much more broader context…This country, over the last 20 or 25 years, has evolved from a three generational structure of families to four and five generations, because of advancing life span and things of that nature. And it's that third generation, the middle generation predominantly populated or controlled by women in their mid-40s to mid-50s, where not only are they caring for their children, but they are caring for their parents…They are the caregiver for the family unit. They are not accounted for in any of these scenarios." – Dr. Henley

"Sometimes a friend or colleague or a paid care worker lives in the home, but usually a family member. So I think we need to look forward to that, and I think for the consumer perspective, that remote monitoring becomes critical, because the caregiver, often the family member, cannot be in the home, most of the time…Remote monitoring also includes remote consultation, also includes the transfer of clinical information among that triangle, not just between two points but three points. And if we don't anticipate that, we're going to wear that middle generation out…And so I vote for Remote Monitoring, but in a much broader context." – Dr. Henley

"In thinking about consumer access, indeed, access, it did include providing that access to others, perhaps, you know, mom in Kansas, when the patient is somewhere else or the daughter is somewhere else. So the technology was inclusive of that. The broader increasing technology of having mom's blood pressure be an icon on the screen that you can monitor has a little ways to go yet in some circumstances, but providing access didn't just mean the patients, themselves." – Dr. Robertson

Following this discussion, Secretary Leavitt declared a consensus on the matter of having Consumer Access as the first priority of the Consumer use case choices.

Provider Use Case

"Better medication management reduces medical error. But I think abundant research also shows that what produces the most medical errors is hand-off of patients from A to B to C…So, again, I think referrals and transfer of care in that context, to me, was why I ranked it much higher than the first one, simply because it's that hand-off. Again, the more people that touch the patient, the greater number of errors you get and the lesser the degree of quality…It's that hand-off that's critical, and I think that's why transfer of care, to me, is far more important." – Dr. Henley

"This goes actually toward the consumer access to clinical information and the medications management. One missing item, I saw, in the write up of the detail of it, was around authentication identification of the end users; that I think we need to make sure that we include [this]. I assume we're not speaking of manually entered information here on medications management, as well as clinical consumer access to information. And the original identification of that user is who they say they are, and then the authentication of each time they log in is critical, if we're going to be delivering information from live EHR systems, or pharmacies, or payer databases." – Mr. Hutchinson

"There will actually be some recommendations later this afternoon that start down that road of identifying from an identity proving standpoint." – Dr. Loonsk

Following this discussion, Secretary Leavitt declared a consensus on the matter of having Medications Management as the first priority of the Provider use case choices.

Population Use Case

There was no discussion on this use case; Secretary Leavitt declared a consensus on the matter of having Quality as the first priority of the Population use case choices.

Comments From the Secretary, DHHS

Secretary Leavitt noted that the meeting thus far had resulted in three important accomplishments for AHIC. First, the Community has created an assumption for AHIC's conclusion and transition, as well as its need to connect with state counterparts in a way that has continuity, coordination, and communication. This important conclusion hopefully will be reached at the next AHIC meeting. Second, AHIC has better prepared itself for making some important decisions on the NHIN. Although this task remains complicated, Secretary Leavitt expressed optimism that there is a "light at the end of the tunnel." He commented that there are sustainable business models that are being pursued through a course that will bear results. Third, AHIC has established priorities for the near term, and potentially for the medium term, on use cases.

The Secretary also reported that a major factor driving AHIC is the commitment on the part of large payers and providers to implement work coming out of the Community. In addition to the public payers that have come behind this effort in the Executive Order through the federal government, firm written commitments from almost 50 of the largest 200 payers in the country have been obtained. Recently, a large union joined that number, and another union has pledged its support as well. It is anticipated that by spring, the goal of having 60 percent of the health care payer's system participating will have been exceeded.

Announcement of a Joint VA-DoD Inpatient EHR

VA Secretary Nicholson thanked Secretary Leavitt and the Community for their extraordinary efforts, commitment, and leadership in guiding these important efforts. He affirmed the President's goal of assuring EHRs for most Americans within 10 years and the support of the VA in helping to achieve this. In building on the President's and Secretary Leavitt's imperative for action, Secretary Nicholson announced a joint VA-DoD program that will reshape health care for America. The VA and DoD have agreed to make the vision of having a joint inpatient EHR a reality. This groundbreaking event will have benefits that extend beyond the military and the veteran communities. This agreement has the potential to change the future of electronic health care records nationwide, possibly worldwide. The joint VA-DoD inpatient EHR will result in significant savings for taxpayers, making inpatient medical records instantly accessible to doctors and other clinicians in both Departments. It will help the VA and DoD share medical data more seamlessly, and will help provide better care to their patients.

The first step toward achieving this joint inpatient EHR will be an examination of the clinical and business processes of both Departments, and a determination of the means and methods to achieve cost effectiveness. Secretary Nicholson commented that once the groundwork has been laid for the development of this joint inpatient record, the doors of opportunity for other health care systems, both public and private, will begin to swing open, and may result in the model for other large providers in this country to emulate. He added that the potential that this joint effort holds for the nation's health care community is probably immeasurable. A successful, vibrant, and dynamic VA-DoD model can be synthesized and reproduced in health care systems, both large and small. Both Departments are committed to finding every opportunity to work together, to provide top-notch care to their patients.

Secretary Nicholson stated that this announcement marks an important step toward honoring this country's patriots by relieving them of a burden that they have shouldered for too long. In so doing, it moves closer to realizing the President's call for better health care technologies for all Americans by improving it for the U.S. military and its veterans. Secretary Nicholson then introduced Dr. Winkenwerder, who provided additional comments from DoD's perspective.

Dr. Winkenwerder thanked Secretary Leavitt and Secretary Nicholson for their leadership and noted that both the DoD and VA are excited about this common, mutually beneficial solution to their inpatient needs. He noted that AHLTA, DoD's outpatient record system, has been a great success. The system is in place at 140 locations around the world, and almost 40 million patient visits have been recorded, resulting in a huge central data repository. On the inpatient side, the DoD does have some inpatient electronic medical record capability working with certain private entities, and the VA already has proven its ability to do this, and was looking to upgrade its platform. Dr. Winkenwerder explained that through this confluence of events, it made sense for the Departments to proceed together and jointly adopt the system to be developed.

The DoD and VA will be examining a feasibility study over the next few weeks, and the Departments hope to make another announcement in the near future that will provide information on how they plan to proceed. Dr. Winkenwerder commented that this effort may not have happened without much of the work that has been done and is being done by the Community.

Secretary Leavitt expressed congratulations to both Departments, noting that this is a monumental event—the integration of these two remarkable and renowned systems, both committed to migrate toward AHIC standards, constitutes an important step forward.

Workgroup Recommendations and Updates

Before this panel began, Secretary Leavitt excused himself from the proceedings. Dr. Kolodner took over as Chair of the meeting

Confidentiality, Privacy, and Security Workgroup Recommendations

Jodi Daniel, ONC, represented Kirk Nahra, Co-Chair of the Confidentiality, Privacy, and Security Workgroup, and reminded Community members that this Workgroup was formed in response to requests from the Consumer Empowerment, Chronic Care, and Electronic Health Record Workgroups, all of which have been addressing privacy and security issues independently. Each of these three Workgroups noted that it would be more advantageous to have a specific Workgroup focused on confidentiality, privacy, and security issues so that these issues could be discussed in one forum, and so that appropriate privacy and security expertise could be brought to bear on those issues. She also reminded AHIC members of the Workgroup's broad and specific charges, which are as follows:

Broad Charge: Make recommendations to the Community regarding the protection of personal health information in order to secure trust, and support appropriate interoperable electronic health information exchange.

Specific Charge: Make actionable confidentiality, privacy, and security recommendations to the Community on specific policies that best balance the needs between appropriate information protection and access to support, and accelerate the implementation of the consumer empowerment, chronic care, and electronic health record-related breakthroughs.

Ms. Daniel explained that the Workgroup first addressed issues related to identity proofing and user authentication, and that today's recommendations would focus on patient identity proofing.

Paul Feldman of The Health Privacy Project provided some general statements regarding the patient identity-proofing recommendations. He explained that patient identity proofing is defined as the process of providing sufficient information to correctly and accurately establish and verify a patient's identity to be used in an electronic environment. The purpose of these recommendations is to advance the specific charges of the Chronic Care, EHR, and Consumer Empowerment Workgroups. More widespread application of these recommendations may necessitate further review. All data included in secure messaging, EHRs, and PHRs should be considered sensitive. Appropriate policies and supporting security measures must be in place to mitigate the risks of unauthorized or unintended data disclosure. Patient identity proofing is just one part of an overall process (e.g., validation, revocation) for issuing and maintaining electronic identity credentials. All parts of the process are interdependent and, if they do not achieve comparable levels of security, the overall strength of the electronic identity credential may not be adequate.

Ms. Daniel noted that the Confidentiality, Privacy, and Security Workgroup suggests that the recommendations be used for adoption as DHHS policy regarding current and future activity. The Workgroup also expressed hope that these recommendations apply more broadly, and that the public and private-sector organizations would parallel DHHS in following these recommendations. Mr. Feldman then described the following patient identity-proofing recommendations:

- ***Recommendation 1:*** Entities that offer health care consumers or their authorized proxy(ies) electronic access to data and services through secure messaging, PHRs, or EHRs should perform, or rely upon, identity proofing performed by the entity or an accountable trusted third party that meets or exceeds one of the following options:
  - ***1.1:*** When it is practical and feasible for a health care consumer or his/her authorized proxy to present themselves in person, in-person identity proofing should be performed by the health care entity. Identity proofing can be achieved by using, at a minimum a valid, government-issued picture ID to verify identity. Examples of such documents include a passport, driver's license or state-issued ID, permanent resident card, or military ID.
  - ***1.2:*** When the health care consumer or his/her authorized proxy has an established and durable relationship (e.g., long-standing, trusted) with an entity, this relationship could be used to confirm the consumer or proxy's identity on the basis of that relationship. Examples of confirmation may include in-person or telephonic dialog where confirmation occurs at the time of request (i.e., a voicemail message left for the entity to confirm at a later time would not be acceptable).
  - ***1.3:*** When the health care consumer or his her/authorized proxy is unable to meet the criteria necessary to satisfy 1.1, and the entity determines that 1.2 is not viable, and a relationship exists between the consumer or proxy and the entity, identity proofing should consist of a method that verifies a person's identity based on information they know or can produce about themselves when asked. The entity or trusted third party should: (1) request basic identity data (e.g., name, address, date of birth, etc.); and (2) require the individual to provide some personal information specific to that relationship (e.g., last prescription, electronic device).

- ***Recommendation 2:*** For the purposes of secure messaging and accessing data through a PHR or EHR, document(s) and the information therein or other information used solely for purposes of identity proofing a health care consumer or their authorized proxy(ies), if kept, should be securely maintained separate from the health care consumer's clinical data.

- ***Recommendation 3:*** Converting from a paper-based health care practice to one that uses EHRs does not require a health care entity to identity proof their patients. Where this conversion also provides patients with access to data within the EHR (such as via flash drive, Internet, or remote access), health care providers should follow the identity proofing recommendation schema noted in Recommendation 1.

- ***Recommendation 4:*** Entities that provide patient access to personal health information via secure messaging or a PHR (such as via a flash drive, populating data records stored on the Internet, or remote access), should follow the identity proofing recommendation schema noted in Recommendation 1.

- ***Recommendation 5:*** Where applicable, the Certification Commission for Healthcare Information Technology (CCHIT) should develop certification criteria for the systems and networks they certify to support the identity proofing practices in these recommendations.

Ms. Daniel explained that the Workgroup is considering a number of topics as candidates for a future round of recommendations. For example, there has been some preliminary discussion on identity proofing in instances where no prior relationship exists. Mr. Feldman described some additional potential future topics for consideration, including: (1) identification and analysis of the differences between the current HIT environment and the Health Insurance Portability and Accountability Act (HIPAA) (activities of non-covered entities, with respect to EHRs, PHRs, and health information exchanges); (2) privacy protections for information held by non-covered entities in collaboration with the Consumer

Empowerment Workgroup per their recommendation 2.1; and (3) an analysis of the effects consumer choice and control could have on the benefits of electronic HIE.

Discussion Highlights

There was minimal discussion on Recommendations 1 through 4.

Dr. Kolodner declared a consensus for AHIC unanimously accepting the Confidentiality, Privacy, and Security Workgroup Recommendations 1, 1.1, 1.2, 1.3, 2, 3, and 4.

Highlights from discussions on Recommendation 5 follow:

"Recommendation 5 talks about the process for CCHIT to develop certification criteria for the systems, but I'm curious if we focused on the data requirements of the process. For instance, I know we can use last prescription and other things like that, but are we looking at other even more readily available information like credit reports are used in the financial industry?" – Mr. Hutchinson

"I think that's exactly the intention, understanding that there is a variety of potential data sources that would be useful here, and to let CCHIT dig into that." – Mr. Feldman

"In-person identity proofing could be either directly or through a third party. And so it could be that there is a trusted third party that would use another mechanism where there is a relationship for identity proofing. And then again, where there isn't a relationship, that's where the Workgroup said that they wanted to talk about that more, and to think through what, for instance, the financial industry is doing." – Ms. Daniel

"How do you build into a certification process a mechanism that says, 'okay, this product or this system is good because somebody has checked somebody's ID'…How do you build that into a system? Am I missing something? Isn't there a step in between these two things?" – Mr. Green

"Absolutely. If you noticed, the first two words in this recommendation [are] 'where applicable,' so if it is based on an existing relationship, where the provider just has had a longstanding 10-year relationship with a particular patient, and is willing to verify the identity based on that longstanding relationship, the system would have no criteria in it for identity proofing. However, where, for instance, there is the recommendation to keep the information separate, there could be a review of the system to make sure that there is a way of keeping that information separate, in order to meet that requirement." – Ms. Daniel

"I think we ought to give CCHIT a chance to evaluate, based upon the work that they are doing, where this fits in that work…efore we put the requirement on them to do that. So I was hedging on the first two words, the 'where applicable,' quite a bit, on the recommendation. So I'm assuming that this 'where applicable' would go over to CCHIT, and they would get to decide." – Mr. Hutchinson

"We just wanted to make sure that one, that CCHIT wasn't doing something inconsistent with these recommendations, and wanted to put forth that as a priority, and where there might be an opportunity in order to help support these, to do so. And that was sort of the intent of this. And that's why we put the 'where applicable,' because all of these recommendations won't be a perfect fit with certification criteria." – Ms. Daniel

"I suggest that the recommendation be revised a little bit to include some of those ideas. When you have words like 'CCHIT should develop certification criteria for systems,' it sort of is like a foregone conclusion before you've had that dialogue." – Mr. Green

Following these comments, Dr. Kolodner declared consensus on tabling Recommendation 5 so that the Workgroup can reword the recommendation and bring it back to the Community for consideration at a later time.

Consumer Empowerment Workgroup Recommendations

AHIC member Nancy Davenport-Ennis reminded Community members that the Consumer Empowerment Workgroup's broad charge is to make recommendations to the Community to gain widespread adoption of a personal health record that is easy to use, portable, longitudinal, affordable, and consumer centered. A number of broad charge issues must be addressed. Ideally, personal health data can be exchanged among PHRs and sources of personal health information (e.g., electronic medical records, payer or pharmacy systems) under the control of the patient while preserving the meaning of the data. Privacy protection and security safeguards are paramount, and timely access for all consumers to their personal health information should be ensured. Appropriate incentives to encourage consumer and provider adoption of PHRs should be identified and promoted. Research on effective messaging from consumers and providers should guide broad educational efforts to engage them.

Ms. Robertson then presented the recommendations of the Consumer Empowerment Workgroup.

Interoperability and Portability Recommendations:

- ***Recommendation 1.1:*** DHHS should promote consumer access to their personal health information in the trial implementations of the NHIN.

- ***Recommendation 1.2:*** Ms. Davenport-Ennis noted that Recommendation 1.2 will be presented at the next AHIC meeting, to allow for more time to further tease out this recommendation.

Privacy and Security Recommendations:

- ***Recommendation 2.1:*** The AHIC Confidentiality, Privacy, and Security Workgroup, in collaboration with the Consumer Empowerment Workgroup, should develop principles and identify best practices for privacy policies for consumers' PHR data that are interoperable (i.e., protections that follow the consumer as his or her data move or are shared). These recommendations should apply to all individuals and entities, including both covered and non-covered entities under HIPAA.

- ***Recommendation 2.2:*** The DHHS Office for Civil Rights should provide guidance to clarify the protections provided under HIPAA regarding the rights of consumers and their proxies to timely access to their electronic personal health information requested from covered entities.

- ***Recommendation 2.3:*** CMS, in collaboration with the DHHS Office for Civil Rights and other interested agencies, should develop policies and guidelines for HIPAA-covered entities and business associates for authorization of data release to and from PHRs, including the development of HIPAA-compliant standardized authorization language, no later than December 28, 2007.

- ***Recommendation 2.4:*** The State Alliance for e-Health should consider exploring issues relative to state privacy laws and PHRs and share their findings with the Community and DHHS. The Consumer Empowerment Workgroup intends to provide the State Alliance for e-Health with background information and a detailed explanation for this request.

Incentives for Adoption Recommendations:

- ***Recommendation 3.1:*** DHHS, through AHRQ, and in collaboration with the Indian Health Service, CMS, the VA, and the Office of Personnel Management, should develop an evaluation framework that can assist in the systematic assessment of PHR offerings to federal employees and beneficiaries, by December 28, 2007. Evaluation criteria may include the effect of PHR services on health outcomes, level of consumer engagement in their health care, economic impact, data security, and other measures.

- ***Recommendation 3.2:*** In 2007, DHHS, through AHRQ when appropriate, should conduct evaluations that will provide useful information needed to develop the evaluation framework for assessing PHRs specified in Recommendation 3.1. Specific study topics include the impact of data sharing through HIE, the comparative value of various data sources, and the impact of various architectural models.
  - ***3.2.1:*** DHHS should assess how the sharing of personal health information with consumers through the use of PHRs impacts health care quality and patient satisfaction, including the results of private-sector efforts as available.
  - ***3.2.2:*** DHHS, through AHRQ, should conduct a study to assess the comparative value of and challenges related to using data on diagnoses and medication derived from claims, administrative, clinical, laboratory, pharmacy, and consumer-based sources to populate and maintain PHRs, including evaluations of the current availability of each source of data and of consumer and clinician reactions to and decisions based on the use of these data. Because of the low rate of EHR adoption by providers, the study should begin with an examination of experiences with currently available PHRs based on claims and administrative data as well as consumer-based sources, then move to clinical and other data over time, with interim results reported back to the Community by December 28, 2007, and final results reported back by June 30, 2008.
  - ***3.2.3:*** DHHS, through AHRQ, should fund evaluations of the impact on health care quality and patient satisfaction of various architectural models of PHRs (e.g., stand-alone, integrated, networked) and delivery methods (e.g., Web-based, compact disc, flash drive).

- ***Recommendation 3.3:*** The VA should conduct an evaluation of the benefits of their My Health*e*Vet PHR in the 2007 calendar year, and report back to the Community about the status and results to date no later than December 28, 2007. Based on the evaluation, the VA should communicate the value of their PHR to veterans and stakeholders to encourage adoption.

- ***Recommendation 3.4:*** DHHS, through CMS and the Indian Health Service, should develop plans to offer portable PHRs with privacy protections to their beneficiaries, and report back to the Community about their plans as available. The plans should take into account the results of the studies and best practices form Recommendations 2.1 and 3.2, as they become available.

- ***Recommendation 3.5:*** In 2007, the Consumer Empowerment Workgroup should identify a range of incentives intended to increase adoption of PHRs, and report on their findings to the Community. These incentives may include financial benefits accruing to patients and consumers, or other forms of economic benefit of established effectiveness (e.g., employee productivity, customer loyalty). The Consumer Empowerment Workgroup should include in its report any available evidence documenting the effectiveness of each type of incentive and how that incentive might best be deployed to encourage PHR adoption.

Education and Outreach Recommendation:

- ***Recommendation 4.1:*** In 2007, the Consumer Empowerment Workgroup should continue to study public and private sector activities to increase consumer awareness of PHRs, including the convening of an expert panel on consumer engagement and social marketing, and report on their findings to the Community.

Recommendation 1.1 Discussion Highlights

"I think that the Consumer Empowerment Working Group felt that we needed to put a placeholder out to say that as we are implementing these various trials, we need, within that process, to be sensitive to creating processes so that consumers can have access to their information." – Ms. Davenport-Ennis

"There will be a spectrum of things that will be encouraged, not required. There will be a set of requirements for all of the applicants, but then in terms of the spectrum of what might be done in any particular trial implementation, what I'm hearing you say, is at least encourage that some of them will include access by the consumer." – Dr. Kolodner

"If you want to encourage adoption of these, if you have Medicaid fund it, at the 90/10 rate, you will encourage states to do it, particularly in the disabled populations, which is a terrific trial opportunity." – Mr. Roob

"That's the broader impact, as opposed to this one being focused just on the trial implementations for the NHIN." – Dr. Kolodner

"I think overall, what the Consumer Empowerment Workgroup is saying is a lot of work needs to be done on PHRs around privacy, security, adoption…One of the things that already has been trialed, as part of the original NHIN deployment…has been the sharing of information between the personal health record, which is, in this case, the CapMed solution as part of the IBM contract, with respect to the National Health Information Network and pharmacy information." – Mr. Hutchinson

"In circumstances where people have used these and found them useful, they have sometimes found them really transformative…being able to see your data graphed out in terms of laboratory values can have a tremendous impact." – Dr. Robertson

After these comments, Dr. Kolodner declared a consensus on AHIC's acceptance of Recommendation 1.1.

Recommendations 2.1 - 2.4 Discussion Highlights

"On [Recommendation] 2.3…it should read the opposite. It should be the Office of Civil Rights, because CMS is not responsible for HIPAA privacy. It's the Office of Civil Rights that has the lead, government-wide. CMS can't develop the policies…the Office of Civil Rights would be the ones who would have the overall responsibility for that." – Mr. Trenkle

"So what we would like to do is to try to make the language reversal, with the understanding that the CMS representatives, that have been working with us on this particular matter, are certainly invited to have further discussions with us." – Ms. Davenport-Ennis

"Right, I think that's fine, but not driving it." – Mr. Trenkle

"As HIPAA applies to covered entities, and at this time, to my knowledge, patients aren't themselves, a covered entity. And maybe it's a philosophical question, because in the case of VA, for example, once the information is in My Health*e*Vet, it belongs to the patient. So I'm just grappling with, are you asking for them to have language that applies to the patient?" – Ms. Graham

"No. I think we're asking them to have language that applies to data release to PHRs from the covered entities. Now, that data may come back from a PHR to a covered entity, and then be sent elsewhere, and then it would, again, come under the covered entity issue." – Dr. Robertson

"I would just maybe ask that in your recommendation, you make that more clear." – Ms. Graham

After this discussion, Dr. Kolodner declared a consensus on the Community accepting Recommendations 2.1 through 2.4, with the understanding that the language in Recommendation 2.3 will be amended to read as follows: "DHHS Office for Civil Rights, in collaboration with CMS and other interested agencies, should develop policies and guidelines for HIPAA-covered entities and business associates for authorization of data release to and from PHRs, including the development of HIPAA-compliant standardized authorization language, no later than December 28, 2007."

Recommendations 3.1 - 3.5 Discussion Highlights

"Why [is] December 28th is the magic date to have reports back? Every time we hear the Secretary, there is a sense of urgency of getting things done. MyHealth*e*Vet has been out there, and it would seem to me that VA personnel could do an evaluation and have a report back to us. It doesn't take a year. So I'm just curious what the timeframes were." – Ms. Gelinas

"We just released the patients' direct access to the clinical data. While the portal's been up, and there has been a contingent of about 1,500 of them that have had access, actually the release for the broad Community just happened at the end of December. So while we could confer about moving the date up, it isn't data we have readily available today." – Ms. Graham

"We did pick that date as a date that seemed feasible, given that we knew that this release was happening. We could discuss it further." – Dr. Robertson

"I think that we would also be accurate in saying that if any of this were going to be accelerated, when it is initiated, certainly it can be delivered prior to December the 28th, but we wanted to make certain that by December the 28th, it was completed." – Ms. Davenport-Ennis

"I just know that in seeing the demonstrations at the VA Medical Center, and talking to the veteran that was actually doing the demo, you just heard directly, empowerment, taking control of his own health. The minute he did the remote monitoring, he knew his weight went up and his blood pressure went up, and, you know, the quality of care and patient satisfaction issues should really come roaring out at us." – Ms. Gelinas

"Maybe this belongs more with [Recommendation] 4.1, but I'm looking at a lot of these evaluations that are occurring, and then [Recommendation] 4.1 talks about convening an expert panel to report on findings of informational consumer engagement. It seems to me like a lot of this information you get out of these evaluations should feed right into [Recommendation] 4.1. And it seems to me they should be linked more closely together than they are now, because it almost sounds like separate activities, but one should feed the other." – Mr. Trenkle

"We separated them, really, because of the importance of using these for education and outreach, not because of how they would come into the Workgroup. But…you're right." – Dr. Robertson

"[Regarding Recommendation 3.4] I think it's probably a fair assessment that perhaps within the plan, there could be a section that would address adoption, or promotion, or integration within a system, that would, then, allow us to have a talking point to move forward and address things like, what is the funding going to be, and what will the implementation schedule be." – Ms. Davenport-Ennis

"It's very important, because we're in a funding situation now that's very tight, and I think if the Community could send a signal that's a little stronger than says 'develop any plan,' I think it would certainly help us in terms of getting additional funding for activities related to PHRs." – Mr. Trenkle

"We certainly could make it a more robust recommendation." – Ms. Davenport-Ennis

Following these discussions, Dr. Kolodner declared a consensus on AHIC's acceptance of recommendations 3.1, 3.2, 3.3, and 3.5. Recommendation 3.4 was tabled until a future meeting so that the Workgroup can develop a recommendation with stronger language.

Recommendation 4.1 Discussion Highlights

There was no discussion on Recommendation 4.1. Dr. Kolodner declared a consensus on AHIC's acceptance of this recommendation.

Quality Workgroup Update

Dr. Clancy began her presentation by asking Community members to send the Quality Workgroup any comments they might have, particularly in terms of visioning and the consumer perspective. She then presented the Workgroup's broad charge:

- Make recommendations to the American Health Information Community so that health IT can provide the data needed for the development of quality measures that are useful to patients and others in the health care industry, automate the measurement and reporting of a comprehensive current and future set of quality measures, and accelerate the use of clinical decision support that can improve performance on those quality measures. Also, make recommendations for how performance measures should align with the capabilities and limitations of health IT.

Dr. Clancy provided some comments on the current state, noting that there is no unified, national quality agenda; reporting is manual, expensive, and time consuming; the focus is on reporting measures that are widely available, as opposed to high priority; and most measures lack detailed data specifications, limiting the potential for automation or easy data capture. Furthermore, multiple stakeholders retain relevant data with minimal data exchange, and varied (often proprietary) data formats and poor data quality hamper data aggregation efforts. Clinical decision support has limited penetration and is not closely aligned with quality reporting. Public reporting is fractured, inconsistent, and infrequently used to support a choice of providers. There has been extensive innovation in the private sector with pay-for-performance, but this is not yet broadly scaled. Privacy and security policy gaps exist for non-covered HIPAA entities' use of electronic health information.

Dr. Clancy explained that in the vision for the future, quality is integral to all aspects of health care. Every citizen expects consistently high-quality, safe, and efficient care. Performance information is

timely, comprehensive, and trusted as an accurate measure of the nation's ability to address high-priority gaps in quality and safety. Information technology and information sharing support consumers' information needs and assist providers in delivering evidence-based care. The national quality agenda promotes these activities, and is: (1) aligned with state and regional health care reform policies, (2) reinforced by public reporting on metrics, and (3) supported b a payment framework that aligns expectations with resources.

The envisioned end state includes widespread awareness of the national quality agenda, and a significantly reduced administrative burden of performance measurement due to adoption of national consensus metrics and unified data stewardship. Needs for data to support measurement and quality improvement will be largely met by EHRs, PHRs, and other network technologies. Common services will allow small practices to participate more effectively. A rapid diffusion of new guidelines, metrics, and best practices into EHRs will be facilitated by harmonized standards and distribution services. In addition, clinical decision support will be routinely available and will support improved quality of care. Also as part of this end state, reporting and feedback will be provided in near real-time. Data collection will be a natural by-product of care, and data quality will be high. Consumers will routinely use provider performance information to help make health care provider decisions, and providers will begin to differentiate on safety, quality, and cost. More health care spending can be performance-based due to better reliability and availability of quality improvement metrics and tools. A national framework for the secondary use of health data for multiple purposes will provide for appropriate privacy and security protections.

Dr. Clancy explained that before this end state can be achieved, a mid-state will need to be reached, possibly within the next 4-6 years. As part of this mid-state, the National Quality Forum and measure developers will have established consensus around national goals for quality and a common measures framework for development and maintenance of measures. A body governed by multiple stakeholders (data steward) will establish uniform operating rules and standards for sharing and aggregating public and private sector data on quality and efficiency. Quality reporting will be largely supported by existing HIT. EHRs will increasingly support data capture and reporting for consensus measures, using interoperable platforms. Quality metric development organizations will have developed an expanded, basic set of metrics, and data standards will exist for common data elements required for quality reporting. Also part of this mid-state, standardization of clinical decision support methodologies is complete, with certification requirements for robust use of clinical decision support in EHR systems. Consumer engagement strategies will be more mature and tied to transparency of price and quality. There will be an increased alignment of reimbursement and quality, and state, regional, and national privacy and security policies will enable appropriate secondary uses of clinical data for quality management (and other applications or purposes).

Dr. Clancy discussed a number of key enablers for reaching this mid-state, including:

- Quality alliances producing uniform standards for sharing, aggregating, and reporting data and metrics.

- Measures that span care delivery.

- NHIN/regional health information organization collaboration on quality measurement initiatives.

- Quality use case guiding standards harmonization and inpatient and ambulatory EHR certification criteria in 2007.

- Quality use case guiding NHIN contracts.

- Scalable open source software development to reduce costs of multiple approaches to data aggregation.

- Availability of knowledge management repository in public domain.

- Clarification of the role of a national health data stewardship entity to oversee appropriate use of data.

- Additional pilot projects for a national framework to link public and private data sets and to assess clinical quality, cost of care, and patient experience.

Dr. Clancy then closed her presentation by noting that the Quality Workgroup will be addressing the following near-term needs: (1) automate data capture and reporting to support core sets of AQA clinician-focused and HQA inpatient quality measures; (2) provide feedback to providers in real or near-real-time; (3) enable data aggregation to allow public reporting of quality measures based on comprehensive clinical data that are pooled across providers and merged, as appropriate, with other data sources; and (4) align performance measurement with the capabilities and limitations of HIT. Dr. Clancy noted that the Quality Workgroup likely will be presenting formal recommendations at the next Community meeting.

Biosurveillance Workgroup Update

Mr. Kahn reminded Community members that the AHIC approved the Biosurveillance Workgroup in November 2005. The Workgroup originally was intended to bring information in the biosurveillance area to the Secretary's attention as quickly as possible. The DHHS Health Information Technology Policy Council recognized a gap in population health needs across AHIC Workgroups, and the Biosurveillance Workgroup appeared to be a natural home for these efforts within the Community, considering the expertise of the Workgroup members and the fact that the Workgroup was looking broadly at how populations would be affected by HIT. The Workgroup presented population health needs at the October 2006 AHIC meeting; AHIC has since asked the Biosurveillance Workgroup to expand its scope.

The Workgroup, in a sense, is the center for the populations, although there certainly are areas of overlap with other AHIC Workgroups. Mr. Kahn presented a diagram of population health and HIT constructs, with five main areas of emphasis centered around tools and organizations such as EHRs, NHIN, PHRs, registries, repositories, automated survey tools, etc. Mr. Kahn emphasized the need to avoid duplicative efforts with other AHIC Workgroups, particularly the Quality Workgroup.

Dr. Lumpkin then discussed in detail the following five main areas of population health that the Biosurveillance Workgroup plans to pursue:

- ***Public Health Surveillance and Response:*** Ongoing systematic collection, analysis, and interpretation of public health data essential to the planning, implementation, and evaluation of public health practice closely integrated with the timely dissemination of these data to those responsible for prevention and control, and management of the appropriate response.

- ***Health Status/Disease Monitoring:*** Accurate, periodic assessment of community and patient-level health status.

- ***Population-Based Clinical Care:*** Health and functional status for populations of people (e.g., income-based, ethnicity based, age-based, gender-based, others defined as needed).

- ***Population-Based Research:*** Research for new insights and innovative solutions to health problems on a population level.

- ***Health Communications/Health Education:*** Inform, educate, and empower providers, consumers, and others about health and wellness issues.

Mr. Kahn explained that in light of this expanded scope for the Biosurveillance Workgroup, the Workgroup is proposing to change its name to the Population Health and Clinical Care Connections (PH/CCC) Workgroup, with the following proposed broad charge: make recommendations to the Community that facilitate the flow of reliable health information among population health and clinical care systems necessary to protect and improve the public's health.

Discussion Highlights

"To get work done, you have to have focus. And there was great intent on why the Workgroup was called Biosurveillance in the beginning, to focus on a very critical area. And this seems like a much broader agenda. How will you maintain focus? Will you come back to us with what the agenda of work is going to be?" – Ms. Gelinas

"The simple answer is yes. And in tandem with this, we also were working on a letter with a set of recommendations as to the areas we should specifically address that was comparable to the earlier Workgroups, but our feeling was that one, we wanted to present this proposition to you first, and two, that we wanted to go through the priority setting process to sort of see how that played out before we came back to you with specific recommendations and use cases. But we will be ready to do that at the March meeting." – Mr. Kahn

"I know that part of the name change was in response to a prior meeting where we said, 'consider the name change.' I think the other context is that at times, I hear some members talking about are the Workgroup task forces that should be formed and then disbanded, or that they should have a longer life because there are some broad areas that need to be moved forward, and you can't do that in a piecemeal fashion." – Dr. Kolodner

"One of the things that we went through, in sort of our historical development was beyond the sort of immediate biosurveillance function, or target that we had; we also did a review of all the areas in public health that might be affected by changing electronic possibilities. And so even prior to the discussions about population health at the AHIC level, we were exploring the various functions of public health that needed to be covered, in some way, by the AHIC." – Mr. Kahn

"I'm confident that, from our discussions, we are talking about a functional area that albeit having some overlap with…other Workgroups, it is a very distinct set of functions, and ones that can't be ignored." – Mr. Kahn

"We, at the last meeting, presented a series of priority areas, many of which are reflected in the use cases that you discussed today. And so we will continue to flesh those out, and begin to move those forward as we do our work. But it begins to set a longer term agenda." – Dr. Lumpkin

"There are some collaborative opportunities between the various different Workgroups. This seems to also scream for the need of cooperation with the EHR Workgroup, to some degree. And so with CCHIT,

if there is going to be need for additional capabilities inside of electronic health records, to support population health, as an example, I'm just curious if you gave any thought with those two areas."
– Mr. Hutchinson

"The overarching concern that I have is that in order to communicate with the public health, within the population dimension, people who are designing electronic health records need to think about that function…things that are currently required to be reported ought to be things that people who design electronic health records are thinking about. The process by which we begin to move to that would be CCHIT. And the harmonization, which we're all committed to, would be through HITSP."
– Dr. Lumpkin

"This is another opportunity to engage the private sector or health care providers, and to integrate them within the system, and to encourage their adoption into the EHR and the PHR world, because by collecting that additional data from those sources, again, you have more opportunities to track and to see trends that are happening in the country that have direct relationship to public health."
– Ms. Davenport-Ennis

Following this discussion, Dr. Kolodner declared a consensus on the Biosurveillance Workgroup changing its name to the Population Health and Clinical Care Connections Workgroup based on its expanded scope.

NHIN Prototype Architecture Demonstrations

Dr. Kolodner introduced this final set of presentations by noting that they represent the culmination of the work being done in the NHIN over the past year. Dr. Loonsk explained that the presenters, representatives for the four consortia, would be demonstrating some aspects of the NHIN. Each of the NHIN consortia was asked to work on the same breakthroughs advanced by AHIC last year, and the presentations focused on components of the NHIN efforts related to consumer empowerment and EHRs. He emphasized that these demonstrations represent software implementations of prototype architectures. The NHIN is intended to be a network of networks—these demonstrations are a presentation of the way these applications would connect to it. Dr. Loonsk noted that the full demonstrations that each of these prototype architectures, a discussion of their architectures, and a discussion of the full software implementations would be presented at the Third NHIN Forum, held January 25-26, 2007, in Washington, DC.

The demonstrations all focused on a scenario involving an 89-year old female patient, Patricia Walker, with diabetes who recently had total knee replacement surgery. She moved in with her daughter, Lois Parker (in a different state), to get help with her rehabilitation. The woman now has a new primary care physician (Dr. Douglas), will also visit a specialist (Dr. Cooper), and has a personal health record.

Consumer Empowerment

In terms of consumer empowerment, three scenarios were demonstrated by IBM and Northrop Grumman: (1) the consumer views and updates registration and medication history information, (2) the consumer establishes provider permissions to view data, and (3) the provider retrieves registration and medication history data. Dr. Loonsk noted that there are some key issues borne out through the demonstrations related to consumer empowerment, including:

- Connection of commercial and "tethered" PHRs to the NHIN
- Opportunities for consumer management of PHR data
- Consideration for how consumers could influence the exchange of data on the NHIN
- Needs for tracking providers associated with patients.

IBM Demonstration

Ginny Wagner of IBM noted that their architecture is open standards based, and adheres to the standards recommended by HITSP. Theirs is a hybrid model, with functionality driven totally by the needs of the health care community. A full-federated model, a centralized architecture, or a combination of the two can be accommodated. The model utilizes a registry, but data are not stored centrally—metadata are stored at the community hub level. The metadata are utilized to provide additional insight into the data, such as the document type, the service date, the source information, and in the future, document types. This will allow for tagging the data, which will be critical for aggregating the data, and using them in a secondary manner in the future.

Ms. Wagner explained that for the purposes of this demonstration, Patricia Walker has been pre-registered to the CapMed PHR, the NHIN, and Surescripts. Dr. Douglas, his office manager, and Lois Parker have been invited to access Patricia's PHR online. A registration summary has been uploaded to the NHIN for consumption by an EMR product. Ms. Wagner demonstrated navigation through the CapMed PHR log-on screen and how Patricia Wagner would go into her PHR to manage her information. Ms. Wagner demonstrated how Patricia Walker would update her address; download information through the NHIN; select, preview, and import information from a hospital discharge summary report; import, review, and update a current list of medications. Other functionalities, such as adding comments, uploading information through the NHIN, and sending information directly to a doctor, also were demonstrated.

Ms. Wagner also demonstrated how Patricia Walker would establish provider permissions to view the data by adding a provider, establishing permissions for the provider, and integrating the registration information into the physician's EMR at the data element level. She noted that IBM's system includes a wizard to assist the patient in inviting a doctor(s) to view the PHR and selecting the extent of the access the doctor(s) and their office staff will have. Ms. Wagner added that this access could be set up for family members, as well. Finally, Ms. Wagner demonstrated how the physician's office manager can integrate the continuity of care document into an EMR.

Northrop Grumman Demonstration

Dr. Robert Cothren of Northrop Grumman began his demonstration with Patricia Walker already logged in to her PHR, which for this demonstration was a simple model of a Web-based application that can be used to manage an online store of personal health information and access NHIN services. Patricia Walker's PHR already includes her updated information, her address, previous provider of care, etc., and one medication—her Type II diabetes medication that she was taking before her knee replacement surgery.

The first component of the demonstration focused on Patricia Walker updating her medications using NHIN services, providing access to them, and then adding Dr. Douglas to her access list. Dr. Cothren noted that in performing a query to retrieve medication history, a number of different sources could respond—for the purposes of this demonstration, RxHub was used. After the medications are imported,

Patricia Walker can decide whether to share information on each medication by checking a box (they are not shared by default). Northrop Grumman's architecture supports controls for the exchange of health information, through a mechanism in NHIN, called the permissions registry. This registry is implemented as an NHIN service, and allows or restricts exchange of health information. Dr. Cothren demonstrated how Patricia Walker would add Dr. Douglas to her permissions registry so that he can retrieve information on her, including information from her PHR.

Using the login screen for University Hospitals in Cleveland and the First Gateway's product that University Hospitals currently uses as their EHR system, Dr. Cothren demonstrated how Patricia Walker is registered as a new patient for Dr. Douglas. Dr. Cothren noted that one of the key goals of NHIN services is the ability for Dr. Douglas to get information on Patricia without having to access her PHR—instead, he can use his EHR system and NHIN services. Dr. Cothren demonstrated how this is accomplished for a new patient such as Patricia Walker (i.e., Dr. Douglas' EHR system reaches out to NHIN and performs a query for information on Patricia Walker). Only information that Patricia Walker chooses to share is available to Dr. Douglas. NHIN services take the information that is appropriate, formats it, and translates it into the form that's expected by Dr. Douglas' EHR system. Dr. Cothren emphasized that Dr. Douglas did not have to learn anything new or perform anything new, demonstrating how the NHIN can keep from getting in the way of the normal work flow of a physician.

Consumer Empowerment Discussion Highlights

"Note that both Accenture and CSC, Connecting for Health, have implemented the same consumer empowerment use case in the context of the work that they've been doing as well." – Dr. Loonsk

"What was accomplished was a consumer viewing and updating the registration and medication history. The consumer establishing provider permissions. And you'll see the connections between the patients to identify providers, and the providers to identify patients. And the provider retrieving registration and medication history data, and you saw that through in EHR. The use case also asks for it through a PHR, as well." – Dr. Loonsk

"When you looked at the new physician, you didn't have a procedure on that. Was there a reason why the procedure wouldn't have been loaded?" – Mr. Roob

"Patricia's PHR system didn't happen to include procedures, as part of the data that it manages. It could have easily included that data as well, and it could have been imported, but that's simply something that wasn't included in Patricia's PHR, in the example of the PHR that we presented here." – Dr. Cothren

"It's heartening to see you come this far, when in October 2005, I don't think we were anywhere near. In nursing, we're having just a real challenge with implementing electronic health records with baby boomer nurses, and the fonts are so small. We're getting enormous complaints from medical and nursing staff, as we have spent millions on computers, and they can't see the fonts. And it is really creating quite a workplace issue, either by lighting or by font…You're certainly dealing with an elderly population, in many respects…Did you consider that aspect when you were designing the screens and the fields that consumers would actually have to utilize?" – Ms. Gelinas

"What's really easy to do is to focus on the end applications here rather than the flow of information, and it's really the flow of information that we were asked to concentrate on during the course of the last year. Now, that all said, the PHR industry is very new. It's very young, it's very immature, and I think there is going to be a lot that still needs to be developed in PHRs to really address some of those issues, and strike the balance between the type of information that could be provided to the consumer versus their ability to deal with that level of information." – Dr. Cothren

"I think the real message needs to be communicated to all the end applications, and the screens that we demonstrated here today, while I think that's an excellent product, I have no problem with that, but that's a message we certainly can communicate back. That is something that the CCHIT maybe wants to communicate back to the vendors they're working with." – Ms. Wagner

"In terms of being on the network and finding information, Ginny, you mentioned that there is, I think, a record of where some information is located. So if a patient had a psychiatric condition, is there a storage of that information, that they were seen at a particular institution, in sort of a locator, or is the architecture such that it goes out and can poll entities so that there isn't that revelation?" – Dr. Kolodner

"Right. In our architecture, that is controlled by the local community of what will be published, and at what level it will be published out there. And then it goes out to a registry, and it only publishes the URL from where the data is located, and you must have the appropriate level of access to get access back, controlled by the local community." – Ms. Wagner

"You actually saw two different versions of how that might be handled here in these two examples, and there are other examples the other contactors are going through. In our architecture, there is no registry, and no publishing of information, so it's handled strictly through a query. And, for instance, NHIN services don't know what types of data may even be stored at certain facilities. Plus the permissions registry allows the consumer the ability to block that information so that it isn't carried on NHIN as well. So there are different answers to those questions that all have pluses and minuses to them." – Dr. Cothren

"When you look at our approach, it's very similar to some of the methods that have been previously described. The key is that the local community can set the parameters for what type of data gets shared, under what circumstances; and that can be also impacted by how the patient feels about that particular data." – Dr. Kelly

Electronic Health Records

In terms of EHRs, three scenarios were demonstrated by Computer Sciences Corporation (CSC) and Accenture: (1) the ordering physician receives lab test results, (2) the physician receives historical results, and (3) a non-ordering clinician receives lab test results or notification. Key issues borne out through the demonstrations related to EHRs, included:

- Routing of lab data to the appropriate EHR
- Portal- and EHR-based retrieval of historical lab results
- Notifications of when new lab data are available
- Lab result routing to "non-ordering" providers of care
- Comparability of data across provider sites.

Computer Sciences Corporation Demonstration

Dr. Marc Overhage of CSC noted that the NHIN is envisioned to be a network of networks; those component networks are referred to as Sub Network Organizations (SNOs). SNOs can be national in scope (e.g., Surescripts, RxHub, or the VA) or regional in scope (e.g., the Mendocino RHE, or the Indiana Health Information Exchange). In either case, they consist of a collection of care delivery organizations

that have specific trust relationships, and may represent a wide diversity of how they move information within their community. They also may have different approaches to what information is shared and exactly how that is controlled. In CSC's model, the SNOs can implement two important pieces of technology: (1) the InterSNO Bridge (ISB), which is the SNOs' window to the NHIN; and (2) a record locator service (RLS), which is the mechanism by which a request for information can be directed to the appropriate care delivery organizations where the patient has received care in the past.

Dr. Overhage emphasized that the separation of clinical and demographic data is a critical issue for architectural design that helps ensure that the patient's privacy is always being protected under the agreements that the local environment may have. Dr. Overhage characterized CSC's prototype of an NHIN as the sum of its parts. There are no central structures or central services; just the two key pieces of technology, the ISB and the RLS, that have to be implemented within a particular network or SNO that enable these diverse SNOs to share clinical data. Dr. Overhage demonstrated how Patricia Walker, seen by Dr. John Watson in Mendocino County, CA, has her lab tests ordered and reviewed using live applications currently being used by providers (e.g., i2i MediTracks). The test results are imported and incorporated into Patricia Walker's electronic medical record. Dr. Overhage noted that research indicates that 14 percent of lab results either don't make it to the outpatient physician or get there later than would have been optimal for patient care. The lab test results also are made available to the ordering physician using his EMR system.

In a second scenario, Dr. Overhage demonstrated how Dr. Watson would receive historical test results for Patricia Walker to provide a clinical context. Because Patricia Walker is a new patient, Dr. Watson authenticates himself to the open HRE, a browser-based application that enables him to access the Mendocino health record exchange. This request is sent to the Mendocino HRE through the ISB. It then is distributed to an HIE in Indianapolis, IN, and in both of those markets, the RLS is consulted to find out where the patient has received care previously. A second-level query then is sent to that care delivery organization to retrieve the data. The data are formatted in a standardized, consistent format, and returned to the Mendocino HRE, after being aggregated in Indianapolis. Those data from Indianapolis then are aggregated with the data from Mendocino, and returned back to the provider.

Dr. Overhage noted that the NHIN is not a health care application; rather, it is a set of capabilities for data transfer in a structured standardized format built on policies, and the trust that has to underlie that, as well as the process. He concluded by noting that this very thin set of NHIN functionalities approach accommodates the diversity that we seen in the current healthcare environment in these different SNOs with different infrastructures for exchanging data, and that it will enable creation of a health care system that will become much more efficient and deliver higher quality and safer care.

Accenture Demonstration

Dr. Brian Kelly discussed some of the underlying principles of Accenture's architecture. One of the fundamental premises is that normalizing data, as they are extracted from provider organizations and brought up to the NHIN to facilitate sharing, is a critical enabler and a critical blocking and tackling piece that has to be addressed to achieve true health care interoperability. Accenture's architecture is based on a flexible hybrid model that allows local communities to determine where health care data are stored. It uses a service-oriented approach consistent with best application designed methodologies. The architecture is designed to sit alongside and leverage the large investments in local provider EMR, laboratory, and medication systems. The model aggregates data at the distinct health care level so that a more complete view of a patient is available to caregivers and patients. These data can be supplemented with information from remote health care settings using the NHIN. Accenture's philosophy and approach is based on the premise that most health care is a local phenomena, and that providing a critical core dataset at the regional level that can be supplemented by additional data from remote locations will be of

great value to patients and providers. Accenture's three distinct health care markets did not have pre-existing regional information exchanges. Therefore, their prototype not only demonstrates that an NHIN can be built quickly, but that in less than 12 months, the infrastructure for three regional health care organizations can be established.

Dr. Kelly also explained that to truly support interoperability and realize the benefits of secondary use, it is critical to address the problem of normalizing data to Federal Health Architecture (FHA) standards. He noted that in less than 1 year, Accenture's prototype successfully interfaced with 31 different provider systems at 15 provider organizations, to extract demographic, lab, and medication data, and convert them to FHA standards.

Dr. Kelly began the demonstration with the ordering physician logging in through one of the regional exchanges after ordering a lab test for Patricia Walker (the physician has been granted permission to access this record). The physician can access a compilation of demographic, medication, allergy, and social history data. These data can be populated through messages from the local provider organizations, from data entered by the provider, and/or by data entered into the patient's personal health record. The physician can view the test results, and in the demonstration, found an abnormal result. Therefore, the physician queries the NHIN, and in so doing, imports additional information from other distinct health care markets—previous lab results can be retrieved in this manner and viewed individually or cumulatively. Information can be put into chart form, with the ability to trend information and show norms. Accenture's architecture provides the capability to map medication, lab test, and demographic data pulled from all of its 15 provider organizations and map them to FHA standards. This allows for capabilities in terms of biosurveillance and aggregation of data sets.

Dr. Kelly demonstrated how Patricia Walker's primary care physician can log into his portal to check on his patient views. In this demonstration, the physician receives an alert that there is a new lab test on Patricia Walker, and he can click on that alert, which takes him to Patricia Walker's home page, where the results can be viewed and analyzed. Dr. Kelly also demonstrated how the primary care physician's staff would log in and view these results, noting that one of the features of Accenture's system is that it requires providers to verify that they have a relationship with the patient before accessing their information.

Electronic Health Records Discussion Highlights

"I just would like to compliment the entire consortia on the work that you have done, and seeing you demonstrate particularly the ability to pull the test, and to exchange medical information, provider to provider. There is, indeed, a great opportunity to reduce medical errors and to ensure that consumers are going to have a more comprehensive, timely set of medical decisionmaking tools in the hands of the doctors that are working with them today." – Ms. Davenport-Ennis

"It also highlights another important topic around the sharing of information, while respecting patients' rights to share information and not share information. It also could introduce significant issues with respect to the quality of care that can be delivered, if physicians feel that they are looking at a complete record of information when, in fact, certain levels of information have been hidden at the patient's request. We ran into the same issues with Katrinahealth.org, when sharing that information, making sure that there are alerts, letting the physician know that not a complete record is being shown. We have to find that balance in making sure that patients know when you are taking information away from the eyes of the physician, of your care provider, that you are increasing the risk of the quality of care that could be delivered." – Mr. Hutchinson

"Not only do we have to identify there is missing information, but I would encourage that we have to identify at least the type, the universal type of information. It's different if there is one field of one prescription missing as opposed to an entire diagnosis that is missing." – Ms. Davenport-Ennis

"I think the Workgroups will be mulling this over, and bringing some things back. Because on the other hand, right now the consumer, in a non-electronic world, has the right to keep that information away and not have it revealed, that there is information being held back. And so the question is, do they lose that right, just because it's electronic? But what is that correct balance? Because there certainly is increased risk when information is missing. We happen, right now, to deliver care in a world where there is always missing information, but we kind of know that, whereas if we move into the electronic world, there is often the assumption that it's now a complete set. So finding that balance is, I think, going to be something that is a very important discussion, and will be probably an ongoing one for the Community for a period of time." – Dr. Kolodner

"I'm sure that there were some enablers that helped you get the job done, and you identified some barriers along the way. And having those visible to us, in our Workgroups, could really help us, because at the end of the day we're all about trying to adopt technology…If we were able to distill out the enabling top 10, the barriers top 10…it would really inform our work a great deal. But I don't want to burden you with that, knowing what went into it so far. But you're just sitting on a wealth of knowledge that we don't have." – Ms. Gelinas

Public Input Session

Speaker Number 1 – Kathryn Serkes, representing the American Association of Physicians and Surgeons (AAPS), commended the AHIC Workgroups for taking an incentive-based approach in formulating their recommendations. She noted that the AAPS has unanimously passed a resolution supporting the voluntary adoption of HIT. The resolution also indicates that adoption of HIT, or an EHR, should not be a requirement for participation in a government program for either the provider or the patient. Ms. Serkes added that the American Legislative Exchange Council, a nonpartisan association of state legislators, is working to develop a set of principles for HIT adoption; these draft principles promote an incentive-based or voluntary-based approach as well.

Ms. Serkes noted that the issue of HIPAA non-covered entities has surfaced with the Consumer Empowerment Workgroup recommendations presented at the meeting. She explained that AAPS believes that it would be valuable to suggest best practices for non-covered entities, but the organization would oppose any efforts to extend HIPAA regulations to non-covered entities. Many AAPS members have elected to remain non-covered entities. HIPAA does not require patient consent for disclosure of records, but merely the advisement of how the records may be used, and there is the provision for the non-binding request for specific restrictions. Some of the patients who choose to utilize non-covered entities as providers do so to protect their ability to consent to disclosure. The privacy issue is one of the reasons that patients go to non-covered entities.

Ms. Serkes summarized by stating that the AAPS believes that patients should be empowered as consumers, and that consumer empowerment means greater and better choices. The Association also believes that one of those choices should be the choice of refusal—patients should be able to refuse treatments and/or participation in an HIT or NHIN system. She noted that it is promising that the demonstrations given at the meeting included multiple opt-out points for patients. Ms. Serkes concluded her comments by thanking AHIC and the presenters at this meeting for all of their efforts.

Closing Remarks

Before adjourning the 11th AHIC meeting, Dr. Kolodner reminded participants that the next meeting, previously scheduled for March 6, 2007, has been moved to March 13, 2007. This meeting is expected to include a focus on confidentiality, privacy, and security issues, with updates from a number of groups, including recommendations from several of the Workgroups that did not make recommendations at this meeting. Dr. Kolodner then thanked everyone in attendance, and adjourned the meeting.